Evaluation and Treatment of Femoroacetabular Impingement Prior to Arthroscopic Surgery

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Femoroacetabular impingement (FAI) has been recognized as a cause or contributor to hip pain and arthritis (Ganz et al, CORR, 2003)

Arthroscopy is an effective treatment (Harris, Curr Rev Musc Med, 2013)

FAI has remained a challenge to diagnose and promptly treat - Why?

- Sometimes nonspecific, chronic symptoms - groin, back, knee (Nepple et al, JAAOS, 2013)
- Providers unfamiliar with the presentation or further evaluation of FAI (Reid et al, J Rheum, 2010; Yeung et al, Arthroscopy, 2014)
Methods

• Study population:
  - Insurance claims from over 20 million privately insured patients in the United States from 2007-2011
  - Search performed using PearlDiver Patient Records Database (PearlDiver Technologies, Fort Wayne, IN)

• Inclusion:
  - Patients undergoing hip arthroscopy for femoroacetabular impingement:
    • Femoroplasty (CPT code 29914)
    • Acetabuloplasty (CPT code 29915)
    • Labral Repair (CPT code 29916)
Methods

• Pre-operative analysis
  - Imaging in the 1 year prior to surgery (CPT codes)
    • Radiographs, magnetic resonance imaging, computed tomography, arthrography
  - Diagnoses in the 6 months prior to surgery (ICD-9 diagnosis codes)
    • Hip, knee, or back pain (or associated diagnoses)
  - Treatments in the 1 year prior to surgery (CPT codes)
    • Physical therapy, hip injection/aspiration, lumbar MRI, chiropractic treatment, spinal injection, spine surgery
Results - Arthroscopic Procedures

- 1,462 patients underwent arthroscopic treatment with femoroplasty, acetabuloplasty, or labral repair.

Femoroplasty: 1,164 (79.6%)
Acetabuloplasty: 737 (50.4%)
Labral Repair: 743 (50.4%)

Diagram showing the number of procedures performed in combination or alone.
Results - Preoperative Imaging

- Imaging of the hip or pelvis in the 1 year prior to arthroscopy

<table>
<thead>
<tr>
<th>Modality</th>
<th>Patients (%)</th>
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</thead>
<tbody>
<tr>
<td>Radiographs</td>
<td>965 (66.0)</td>
</tr>
<tr>
<td>Magnetic resonance imaging</td>
<td>961 (65.8)</td>
</tr>
<tr>
<td>Computed tomography</td>
<td>183 (12.5)</td>
</tr>
<tr>
<td>Arthrography</td>
<td>323 (22.1)</td>
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</tbody>
</table>
Results - Associated Diagnoses

- Diagnoses present 6 months prior to arthroscopy
- Most had hip pain diagnosed 6 months prior to arthroscopy, and many had other symptoms

<table>
<thead>
<tr>
<th>Diagnosis Group</th>
<th>Patients (%)</th>
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<tbody>
<tr>
<td>Hip Pain</td>
<td>1356 (92.8)</td>
</tr>
<tr>
<td>Back Pain</td>
<td>236 (16.1)</td>
</tr>
<tr>
<td>Knee Pain</td>
<td>174 (11.9)</td>
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</table>
Results - Preoperative Treatments or Other Evaluation

- Treatments or other imaging in the 1 year prior to arthroscopy

<table>
<thead>
<tr>
<th>Modality</th>
<th>Patients (%)</th>
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</thead>
<tbody>
<tr>
<td>Treatment</td>
<td></td>
</tr>
<tr>
<td>Physical Therapy (any)</td>
<td>620 (42.4)</td>
</tr>
<tr>
<td>Hip Injection</td>
<td>375 (25.7)</td>
</tr>
<tr>
<td>Chiropracty</td>
<td>198 (13.5)</td>
</tr>
<tr>
<td>Spinal Injection</td>
<td>18 (1.2)</td>
</tr>
<tr>
<td>Imaging</td>
<td></td>
</tr>
<tr>
<td>Lumbar MRI</td>
<td>117 (8.0)</td>
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Discussion

• Femoroplasty often performed with other arthroscopic procedures for FAI
  – Fixation of labral injuries common

• Preoperative imaging is variable
  – Radiographs only versus more advanced imaging? (Yen et al, J Pediatr Orthop, 2013)

• Most patients had at least 6 month history of hip pain, although many with other symptoms
  – Appropriate time from diagnosis to treatment?
  – Does the presence of associated diagnoses represent difficulty in evaluation or concomitant pathology?
Limitations

• Retrospective review of aggregated claims data

• Different types of providers (primary care vs orthopaedic specialist) order imaging or treatment

• Time of original diagnosis unclear, based on lack of specific diagnosis code for FAI OR if out of this network
Next Steps

• Determine timing of presentation to eventual treatment

• Explore the role of primary care or other providers prior to seeing an orthopaedic surgeon

• Understand the impact of variability of preoperative imaging and treatment on disease process or cost or quality of care
References